

**REMARKS**

Claims 1-25 are pending in the application. Claims 1, 8, 15, 22, and 23 are independent claims. Claims have been rejected under the judicially-created doctrine of double patenting and under 35 U.S.C. 103(a). Those rejections are respectfully traversed and reconsideration is requested.

**Statement of Substance of Examiner Interview**

Applicant's Attorney thanks Examiner Shingles for a helpful telephonic interview on December 8, 2006 with the undersigned regarding the pending case. During the interview, Fig. 3 of the Application, U.S. Patent No. 6,014,659 to Wilkinson, and U.S. Patent No. 6,161,144 to Michels were discussed. While the Michels reference discloses multiple search engines coupled in a series, each search engine merely performs a predetermined number of search iterations, and does not disclose "a partial index feedback loop" (or "feeding back a partial index") as claimed by the Applicant. The examiner agreed that neither of the cited references include a partial index feedback loop, and that the amended claims differentiate over the cited references. The examiner also stated that a further search would be performed.

**Double Patenting Rejections**

Claims 1-23 have been rejected under the judicially-created doctrine of double patenting over claims 1-25 of U.S. Patent No. 6,880,064. Claims 1-23 of the application include at least the additional limitation of "a partial index feedback loop" (or "feeding back a partial index"), discussed in detail below, that is not recited by the claims of U.S. Patent No. 6,880,064. Therefore, the referenced claims do not anticipate or make obvious Claims 1-23 of the application, and as such, Claims 1-23 should not be rejected on the grounds of double patenting.

**Rejections under 35 U.S.C 103(a)**

Claims 1-3, 8-10, 15-17, and 22-25 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Wilkinson III (U.S. Patent No. 6,014,659) in view of Michels (U.S. Patent No. 6,161,144). Claims 4-7, 11-14, and 18-21 have been rejected under 35 U.S.C. 103(a) as being

unpatentable over Wilkinson III in view of Michels and in further view of Cao (U.S. Patent No. 6,826,561).

Before discussing the cited references, however, a brief review of the Applicant's disclosure may be helpful without limitation of the claims. In a disclosed embodiment, a lookup table provides a longest prefix match for a search key that is longer than the lookup table's mapper key. Referring to Fig. 3B, the lookup table 100 performs multiple searches of a plurality of mappers 206a-d to determine a result value by providing, as the mapper key 110, successive portions of the search key 104 (Fig. 2). During a search of the plurality of mappers 206a-d, partial indexes are passed from prior mappers to subsequent mappers. If the result is not determined in a first search of the plurality of mappers 206a-d, a series of mappers 206b-d is searched repeatedly with further successive portions of the search key 104 (Fig. 2) until the result value is determined. The multiple searches are performed using a partial index feedback loop by which a subsequent mapper 206d in the series of mappers 206b-d passes a partial index back to a prior mapper 206b in the series of mappers 206b-d. To facilitate the use of a partial index feedback loop, a selector 212 is used to select between a first partial index from the first mapper 206a and a subsequent partial index from a subsequent mapper 206d to pass to the series of mappers 206b-d.

Turning to the cited art, Wilkinson III discusses a method for conducting a reduced length search along a search path. Using a search key, or successive fragments of the search key, a single search unit searches successive nodes along the search path. The path is searched by processing successive search segments in the nodes (*See* Wilkinson III, col. 6, lines 19-29; col. 7, line 66 – col. 8, line 10).

Cited art, Michels, discusses a device for forwarding network traffic. The device includes multiple search engines coupled in a series, each search engine performing a predetermined number of search iterations before passing results to the next search engine in the series. The search is complete once the last search engine in the series completes its search iterations (*See* Michels, col. 8, line 66 – col. 9, line 21).

To establish a *prima facie* case for obviousness under 35 U.S.C. 103(a), (1) there must be some suggestion or motivation to combine reference teachings, (2) there must be a reasonable expectation of success, and (3) the references when combined must teach or suggest all the claim

limitations. For the reasons discussed below, it is respectfully submitted that the Office has not established a prima facie case under 35 U.S.C. 103(a) for Claims 1-25, and that therefore, those claims should be found in condition for allowance.

Wilkinson III and Michels, either separately or in combination, do not teach or suggest the Applicant's claimed "partial index feedback loop by which a series of mappers is indexed in multiple passes with multiple successive portions of the search key" as now claimed in independent Claims 1 and 23 or the Applicant's claimed "feeding back a partial index from a subsequent mapper to a prior mapper to loop back through a series of mappers with plural successive portions of the search key" as now claimed in independent Claims 8 and 15.

Wilkinson III discloses only a single search unit and, as stated by the examiner on page 5 of the Office Action, Wilkinson III fails to teach "a partial index feedback loop by which a mapper is indexed in multiple passes with multiple successive portions of the search key". While Michels discloses multiple search engines coupled in a series, each search engine merely performs a predetermined number of search iterations, where the number of iterations depends on the size of the lookup table and follows the formula  $\log_2 N$ ,  $N$  being the number of entries in the table (*See* Michels, col. 5, lines 54-56.) After the search engine performs the search iterations, the search engine passes its results to the next search engine in the series. Once each search engine completes the predetermined number of search iterations, that search engine is no longer used. Thus, while each search engine performs a predetermined number of search iterations, the series of search engines is searched in only a single pass. In contrast, any one of the Applicant's claimed lookup table, method, and apparatus includes a series of mappers, the series being searched in multiple passes.

Therefore, Wilkinson III and Michels, either separately or in combination, do not teach or suggest the Applicant's claimed "partial index feedback loop by which a series of mappers is indexed in multiple passes with multiple successive portions of the search key" as now claimed in independent Claims 1 and 23 or "feeding back a partial index from a subsequent mapper to a prior mapper to loop back through a series of mappers with plural successive portions of the search key" as now claimed in independent Claims 8 and 15. Therefore, independent Claims 1, 8, 15, and 23 should be found in allowable condition.

With respect to independent Claim 22, Wilkinson III and Michels do not teach or suggest the use of “a selector which selects the next partial index fed back from one of the at least one next mappers or the first partial index from the first mapper as the partial index to the at least one next mapper”; however, Claim 22 has been amended to more clearly claim the disclosed lookup table, and is believed to be in condition for allowance.

Dependent Claims 2-7, 9-14, 16-21 and 24-25 are directly or indirectly dependent on independent Claims 1, 8, and 15, and should be found in allowable condition for at least the same reasons as the claims from which they depend.

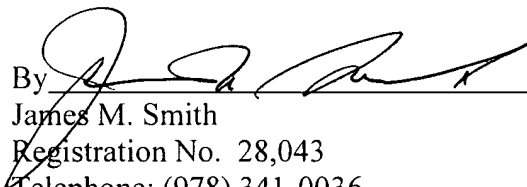
As such, the rejection of Claims 1-23 on the grounds of double patenting and the rejection of Claims 1-25 under 35 U.S.C. 103(a) are believed to be overcome. Accordingly, none of the claims of the application are believed to be anticipated or made obvious from the cited art or any of the prior art. Removal of the rejections under the judicially-created doctrine of double patenting and under 35 U.S.C. 103(a) and acceptance of Claims 1-25 is respectfully requested.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

HAMILTON, BROOK, SMITH & REYNOLDS, P.C.

By   
James M. Smith  
Registration No. 28,043  
Telephone: (978) 341-0036  
Facsimile: (978) 341-0136

Concord, MA 01742-9133

Dated: 12/14/6